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(21) Application number: **02072342**(71) Applicant: **FUJITSU LTD**(22) Date of filing: **20.03.90**(72) Inventor: **TAKIZAWA RITSUO****(54) PRODUCTION OF DIRECTLY BONDING SILICON SUBSTRATE**as $\pm 0.1\mu\text{m}$ or below, the excellent performance SOI substrate is obtained.**(57) Abstract:**

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PURPOSE: To form a uniform and high quality Si thin film layer which has a thickness of $1\mu\text{m}$ or below by diffusing plasma hydrogen at a temperature of 200°C or below to the thickness depending on the thickness of the Si layer on which an element is formed, bonding the substrate on a supporting side substrate through an oxide film, grinding and etching the substrate.

CONSTITUTION: The plane 1a of a first silicon substrate 1, on which an element is to be formed, and the opposite side are processed by hydrogen plasma at 200°C or below and the surface of a second silicon substrate 2 or the plane 1a of the silicon substrate 1 and the opposite side are oxidized. The plane 1a of the first silicon substrate 1 and the opposite side are bonded with the oxidized plane 3, then, the first silicon substrate 1 is etched by solution whose etching speed differs by resistance values to permit the silicon substrate 1 to become a thin film. Since the element forming silicon layer obtained by such method has excellent crystalizing ability, does not have mechanical distortion, can be extremely thin and the thickness is very accurate

